

# SERVICE MANUAL

DATSUN PICK-UP  
MODEL 620 SERIES  
CHASSIS & BODY



**NISSAN MOTOR CO., LTD.**  
TOKYO, JAPAN

## SECTION CL

### CLUTCH

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# CLUTCH

## CLUTCH

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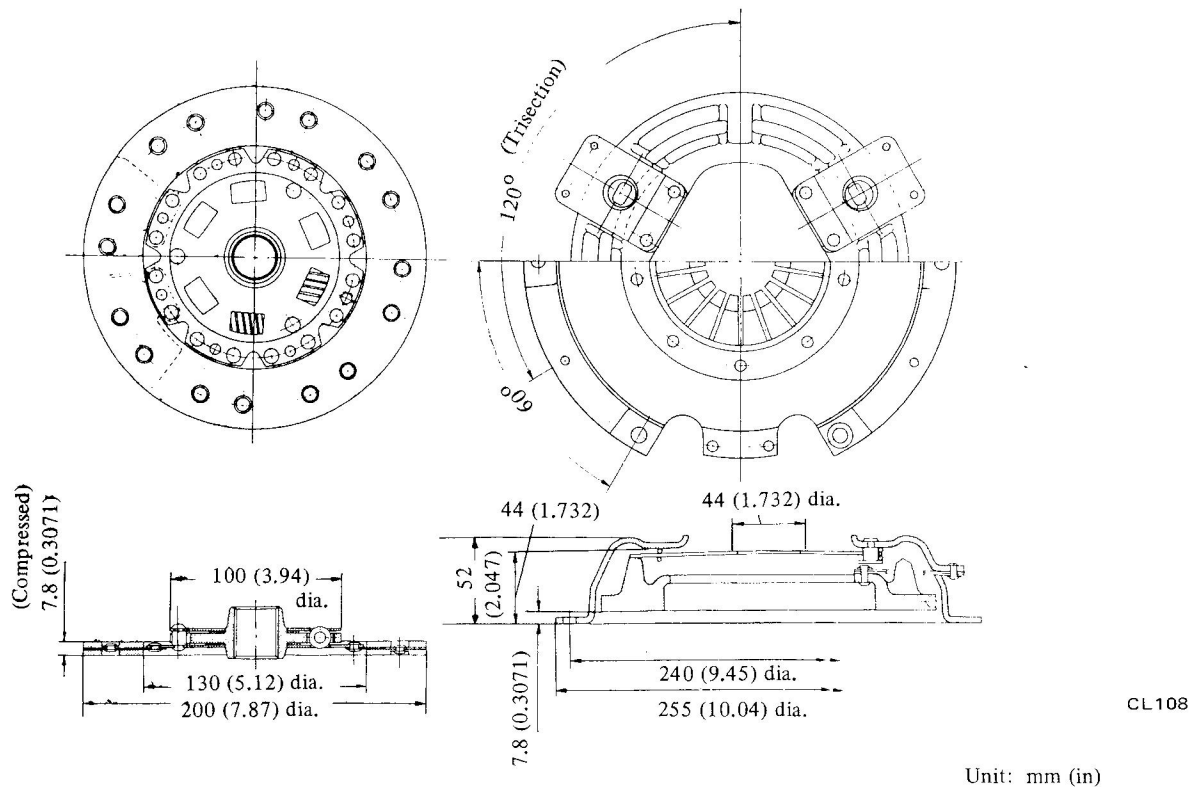
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### DESCRIPTION

The clutch is a single dry disc type

using a diaphragm spring. It consists of the clutch disc, pressure plate, dia-

phragm spring, thrust rings, clutch cover, and clutch release bearing.



CL108

Unit: mm (in)

Fig. CL-1 Construction of clutch disc and cover assembly

### REMOVAL AND INSTALLATION

#### Removal

1. Remove transmission from vehicle.

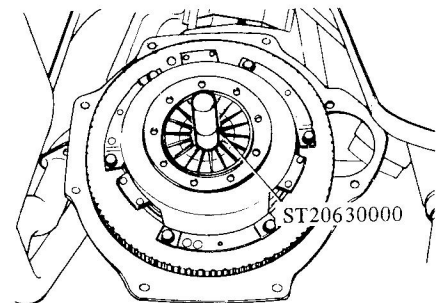
For details of transmission removal, refer to "Transmission Section."

2. Insert Clutch Aligning Bar ST20630000 into clutch disc hub until it will no longer go. It is important to

support weight of clutch disc during further steps.

3. Loosen six screws attaching clutch cover to flywheel one turn at a time each until spring pressure released. Be sure to turn them out in a crisscross fashion.

**Note:** Exercise special care to avoid grease or oil getting on clutch linings.



CL110

Fig. CL-2 Supporting clutch assembly

# CLUTCH

## Installation

1. Apply a light coat of molybdenum disulphide on transmission main drive gear splines.

Slide clutch disc on main drive gear several times. Remove clutch disc and wipe off excess lubricant pushed off by disc hub.

2. Install clutch disc and clutch cover assembly on flywheel. Support two assemblies with Clutch Aligning Bar ST20630000.

**Note:** Be sure to keep disc facings, flywheel, and, pressure plate clean and dry.

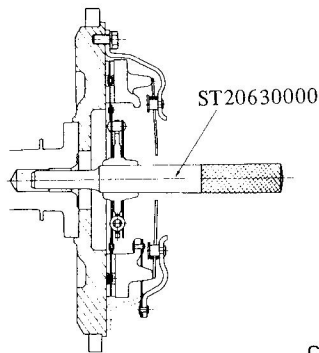


Fig. CL-3 Installing clutch cover assembly

3. Install six bolts to tighten clutch cover assembly to flywheel squarely. Each bolt should be tightened one turn at a time to the specified torque 1.6 to 2.2 kg-m (12 to 15 ft-lb).

**Note:** Three dowels are used to locate clutch cover on flywheel properly.

4. Remove Clutch Aligning Bar ST20630000 after tightening the bolts securely.

5. Install transmission.

**Note:** Make certain that withdrawal lever engages lever ball pin.

6. Connect push rod of clutch operating cylinder to withdrawal lever.

## DISASSEMBLY AND ASSEMBLY

### Disassembly

1. Clutch cover assembly can not be

disassembled since diaphragm spring is securely reveted to clutch cover and clutch cover assembly is balanced.

If necessary, replace clutch cover assembly as a complete unit.

2. Remove clutch release mechanism as follows:

(1) Remove dust cover from clutch housing.

(2) Remove withdrawal lever from clutch housing.

(3) Remove retainer spring from withdrawal lever.

(4) Remove release bearing, bearing sleeve and holder spring from clutch housing as an assembly.

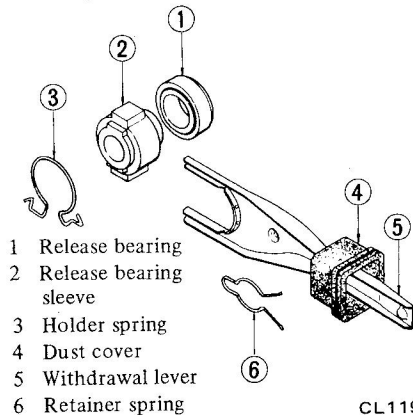


Fig. CL-4 Exploded view of clutch release mechanism

3. Take out clutch release bearing from bearing sleeve, using a universal puller.

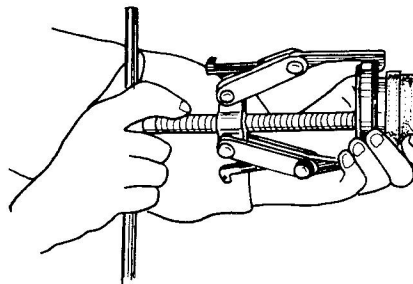
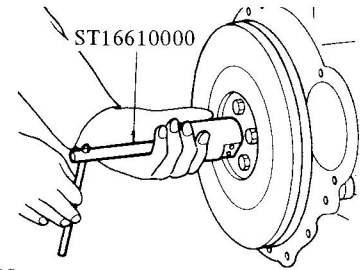


Fig. CL-5 Disassembling release bearing

4. Remove pilot bushing in crankshaft by Pilot Bush Puller ST16610000 (ST16610001 for L16 engine) if necessary. See Figure CL-6.



CL088

Fig. CL-6 Removing pilot bushing

## Assembly

### Release mechanism

1. When assembling release bearing on sleeve, use a press and seat bearing squarely on sleeve.

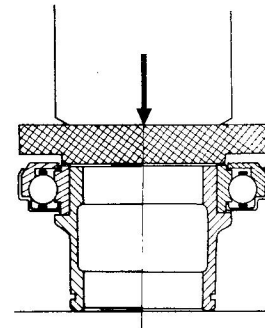
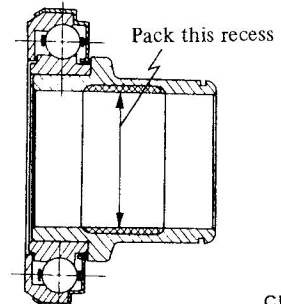


Fig. CL-7 Installing release bearing

2. Before or during assembling, lubricate the following points with a light coat of multi-purpose grease.

a. Inner groove of release bearing sleeve



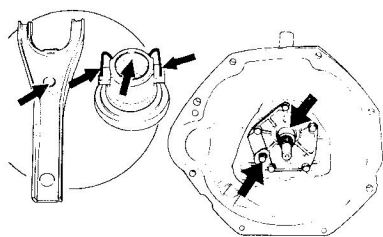
CL093

Fig. CL-8 Lubricating recess of bearing sleeve

b. Contact surfaces of withdrawal lever, lever ball pin and bearing sleeve.

c. Contact surfaces of transmission front cover.

# CLUTCH



CL111

**Fig. CL-9** Lubricating points of withdrawal lever and front cover

**Note:** Very small amount of grease should be coated to the above points. If too much lubricant is applied, it will run out on the friction plates when hot, resulting in damaging clutch disc facings.

3. Install retainer spring to withdrawal lever. Fit holder spring to release bearing and sleeve assembly, then assemble withdrawal lever and bearing sleeve as a unit. Install this assembly on transmission case. Then install dust cover.

## Pilot bushing

Before installing a new bushing, thoroughly clean bushing hole. Install bushing in crankshaft using a soft hammer. Bushing need not be oiled.

## INSPECTION

Wash all the disassembled parts except release bearing and disc assembly in suitable cleaning solvent to remove dirt and grease before making inspection and adjustment.

## Flywheel and pressure plate

Check friction surface of flywheel and pressure plate for scoring or roughness. Slight roughness may be smoothed by using fine emery cloth.

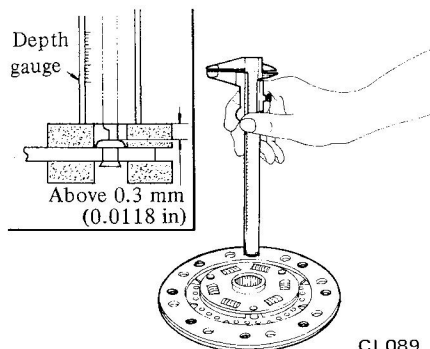
If surface is deeply scored or grooved, the part should be replaced.

## Clutch disc assembly

Inspect clutch disc for worn or oily facings, loose rivets, and broken or loose torsional springs.

1. If facings are oily, the disc should be replaced. In this case, inspect transmission front cover oil seal, pilot bushing, engine rear oil seals and other points for oil leakage.

2. The disc should also be replaced when facings are worn locally or worn down less than 0.3 mm (0.0118 in) at revets.

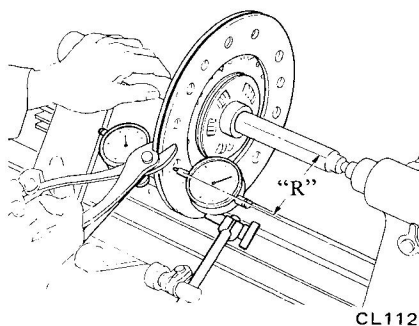


CL089

**Fig. CL-10** Measuring clutch lining

3. Check disc plate for runout whenever the old disc or a new one is installed.

4. If runout exceeds 0.5 mm (0.0197 in) total indicator reading at the outer circumference of facing "R" is 85 mm (3.346 in), replace or repair disc assembly.



CL112

**Fig. CL-11** Measuring disc runout

5. Check the fit of disc hub on transmission main drive gear for smoothly sliding. If splines are worn, clutch disc or main drive gear should be replaced; that is, backlash exceeds 0.4 mm (0.0158 in) at the outer edge of clutch disc.

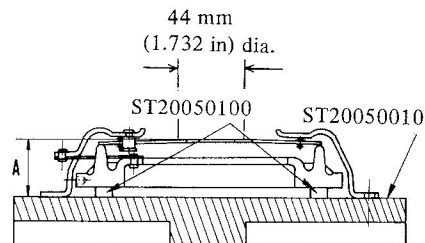
## Clutch cover assembly

1. Check the end surface of diaphragm spring for wear.

If excessive wear is found, replace clutch cover as an assembly.

2. Measure the height of diaphragm spring as outlined below:

- Place Distance Piece ST20050100 on Base Plate ST20050010 and then tighten clutch cover assembly on the base plate by using set bolts.
- Measure the height "A" at several points with a vernier caliper depth gauge.

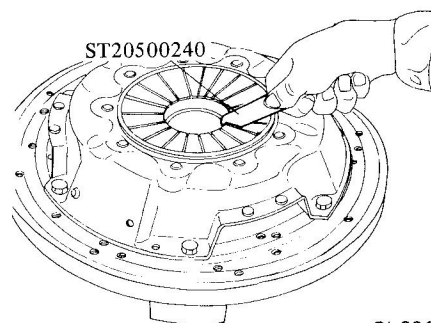


CL090

**Fig. CL-12** Measuring the height of diaphragm spring

If the height "A" of spring end is beyond the specified value of 43 to 45 mm (1.693 to 1.772 in), adjust the spring height with Diaphragm Adjust Wrench ST20050240.

If necessary, replace clutch cover as an assembly. Also, unevenness of diaphragm spring toe height should be less than 0.5 mm (0.0197 in).



CL091

**Fig. CL-13** Adjusting the spring height

3. Inspect thrust rings for wear or damage. As these parts are invisible from outside, shake cover assembly up and down to listen for chattering noise, or lightly hammer on rivets for a slightly cracked noise. Any of these noises mean requirement for replacement as a complete assembly.



# CLUTCH

## Release bearing and sleeve

Check for abnormal wear on contact surface of withdrawal lever, ball pin and bearing sleeve.

## Pilot bushing

Check pilot bushing in crankshaft for wear or roughness. If necessary, replace it.

When bushing is defective, be sure to check transmission main drive gear at the same time.

# CLUTCH CONTROL

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## DESCRIPTION

The hydraulic clutch control consists of a pedal, master cylinder, operating cylinder and withdrawal lever.

When the clutch pedal is depressed, the piston of the master cylinder

forwards clutch fluid to the operating cylinder via a pipe line. The movement of the operating cylinder piston is transmitted to the withdrawal lever through the push rod, thus disengaging the clutch.

The operating cylinder is a non-

adjustable type that uses no return spring. In this unit, the withdrawal -to-push rod play adjustment is not necessary since the "S" as shown in Figure CL-15 serves to automatically compensate for wear on clutch disc.

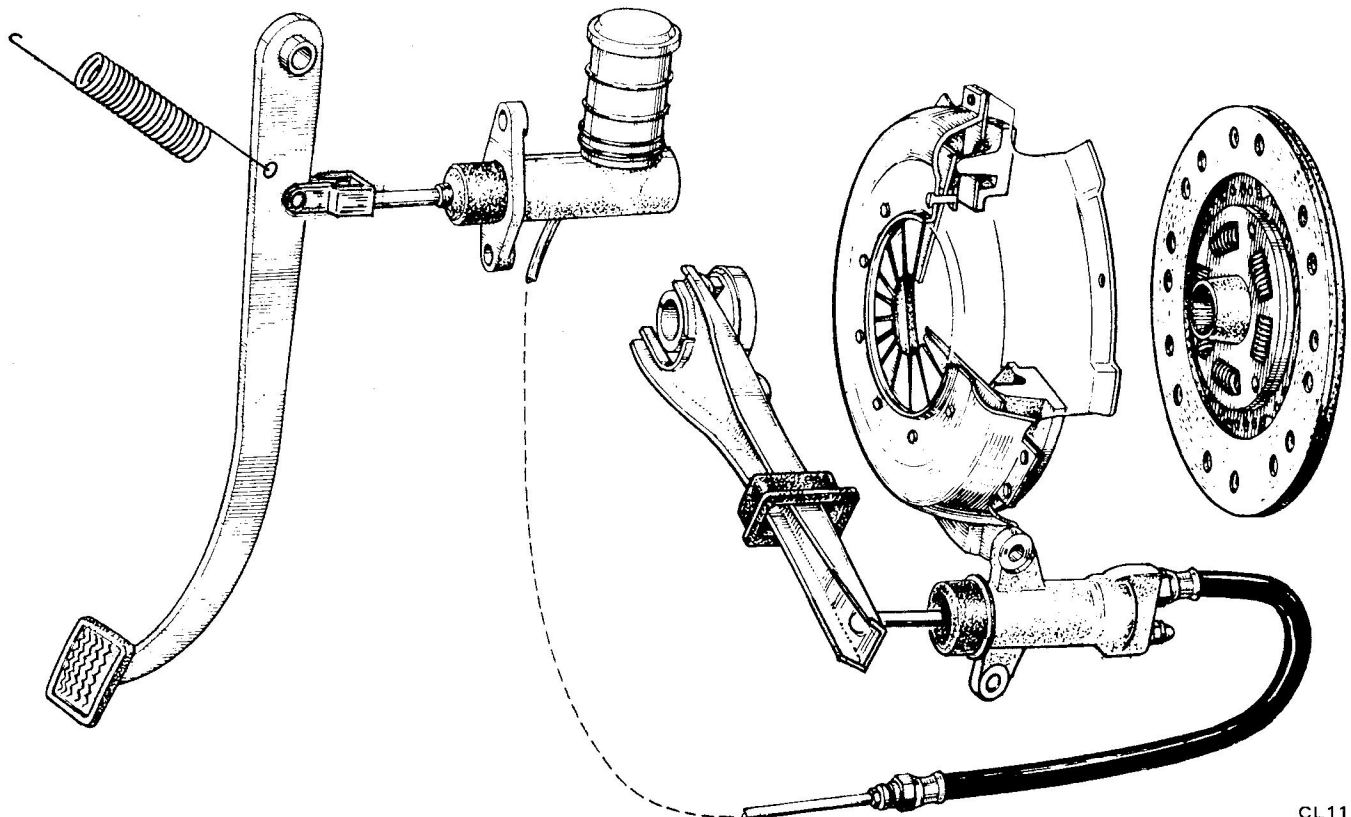


Fig. CL-14 Clutch operating system

# CLUTCH

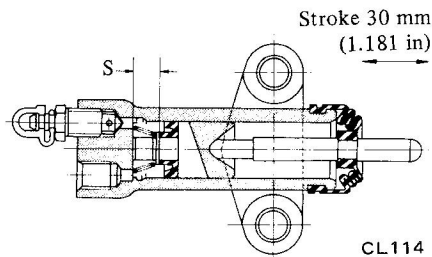


Fig. CL-15 Non-adjustable operating cylinder

## CLUTCH PEDAL

### Removal and installation

#### Removal

1. Pry off cotter pin and take out clevis pin; disconnect push rod from pedal assembly.
2. Unhook return spring. Loosen off fulcrum pin and remove pedal assembly.

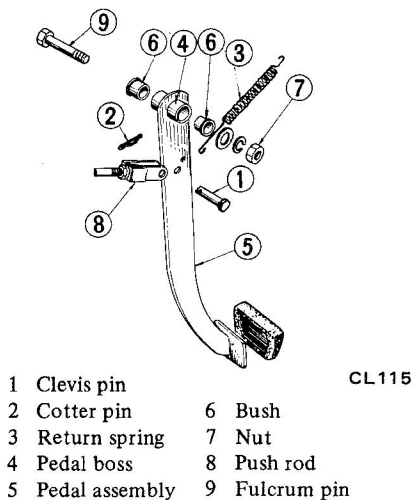


Fig. CL-16 Exploded view of clutch pedal

**Note:** Before removing clutch pedal, note toe board clearance at pedal pad.

#### Installation

To install, reverse the order of removal. Apply multi-purpose grease to the friction surfaces of the disassembled parts as shown in Figure CL-18.

**Note:** Refer to Figure CL-17 for the correct direction of return spring.

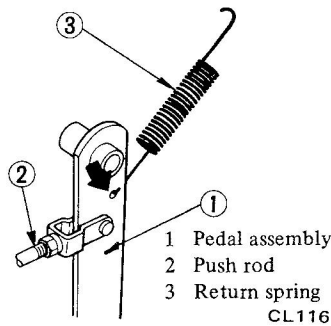


Fig. CL-17 Hooking return spring

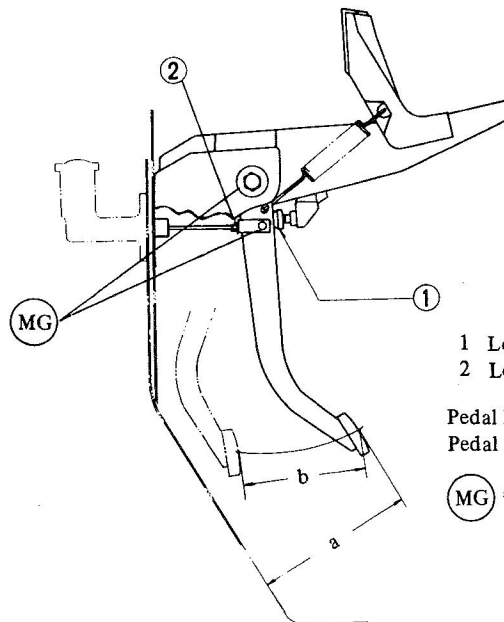
### Inspection and adjustment

Clean all the following parts in cleaning solvent and check for wear, damage or any other abnormal condition. Replace the parts which are defective.

1. Return spring
2. Bush
3. Pedal boss, etc.

**Note:** Exercise care in adjusting the play not to block the port or master cylinder. A blocked port may result if too small play at clevis pin exists.

3. After adjusting, check the pedal full stroke is in 126 to 132 mm (4.96 to 5.20 in).



- 1 Lock nut "A"
- 2 Lock nut "B"

Pedal height  $a = 163 \text{ mm (6.42 in)}$   
Pedal full stroke  $b = 129 \text{ mm (5.08 in)}$

(MG) = Multi-purpose grease

Fig. CL-18 Adjusting pedal height

#### Tightening torque:

Pedal installation bolt  
(Fulcrum pin):  
1.9 to 2.4 kg-m  
(14 to 17 ft-lb)

Lock nut "A" "B":  
0.8 to 1.2 kg-m  
(5.8 to 8.7 ft-lb)

**Note:** Depress and release clutch pedal over its entire stroke to ensure that the clutch linkage operates smoothly without squeak noise, interference and binding.

# CLUTCH

## MASTER CYLINDER-CLUTCH

### Removal and installation

#### Removal

1. Remove clevis pin at push rod.
2. Disconnect clutch tube from master cylinder and drain clutch fluid.
3. Remove bolts securing master

cylinder to the vehicle, and dismount master cylinder.

**Note:** Remove dust cover from master cylinder body, on the side of driver's seat.

#### Installation

To install, reverse the order of removal. Closely observe the following

instructions.

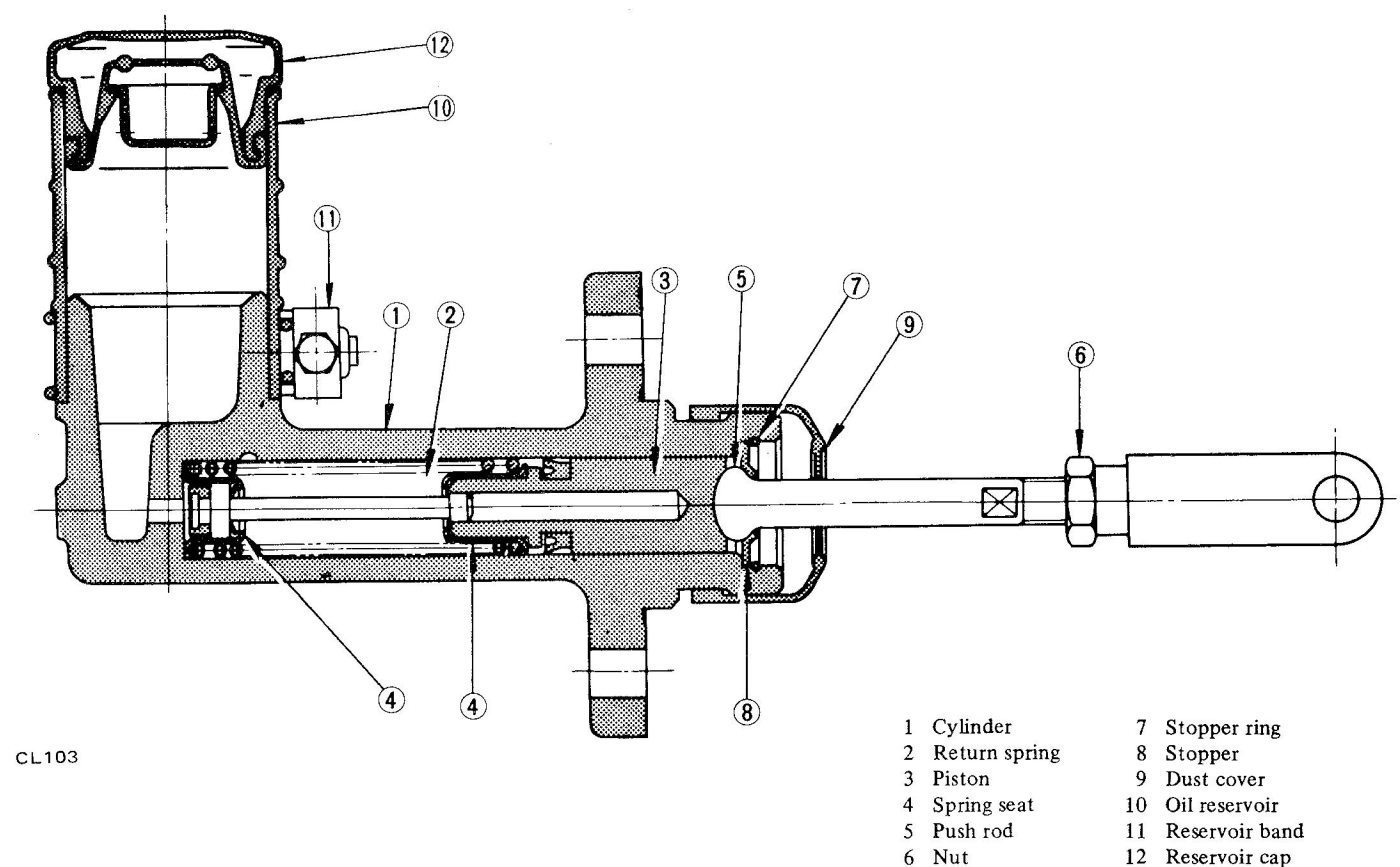
- 1 Adjust pedal height by changing pedal stopper length.
- 2 Bleed air out of hydraulic system.

Tightening torque:

Master cylinder to dash panel:  
0.8 to 1.2 kg-m  
(5.8 to 8.7 ft-lb)

Clutch hose connector:  
1.5 to 1.8 kg-m  
(11 to 13 ft-lb)

### Disassembly and assembly



CL103

Fig. CL-19 Clutch master cylinder

#### Disassembly

1. Remove dust cover and take off stopper ring from body.
2. Remove push rod and piston assembly.
3. When replacing piston cup, disassemble piston assembly by straightening the tooth of spring seat, if necessary.

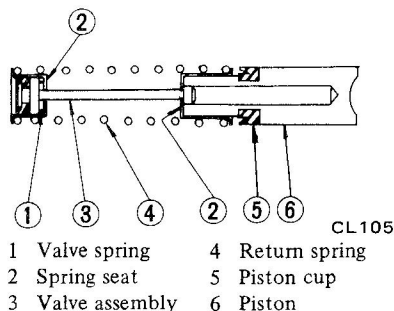


Fig. CL-20 Piston assembly

#### Assembly

To assemble, reverse the order of disassembly. Closely observe the following instructions.

- 1 Dip piston cup in brake fluid before installing. Make sure that it is correctly faced in position.
- 2 Apply a coating of brake fluid to cylinder and piston when assembling.

# CLUTCH

## Inspection

**Note:** To clean or wash all parts of master cylinder, operating cylinder and piping, clean brake fluid must be used. Never use mineral oils such as gasoline and kerosene. It will ruin the rubber parts of the hydraulic system.

1. Check cylinder and piston for uneven wear or damage, and if necessary, replace.
2. If the clearance between cylinder and piston is more than 0.15 mm (0.0059 in), replace cylinder.
3. Renew piston cup when disassembled. It must also be replaced when wear or deformation due to fatigue or damage is found.
4. Damaged dust cover, oil reservoir or cap, should be replaced.

Return spring and valve spring must also be replaced when they are broken or weak.

5. Replace clutch hose and tube if any abnormal sign of damage or deformation is found.

## OPERATING CYLINDER

### Removal and installation

#### Removal

1. Detach clutch hose from operating cylinder.
2. Remove two bolts securing operating cylinder to clutch housing.

#### Installation

Install in the reverse order of removal.

Observe the following instructions.

1. Bleed air thoroughly from clutch hydraulic system.

2. Do not install return spring, or clutch will not be disengaged properly.

Tightening torque:

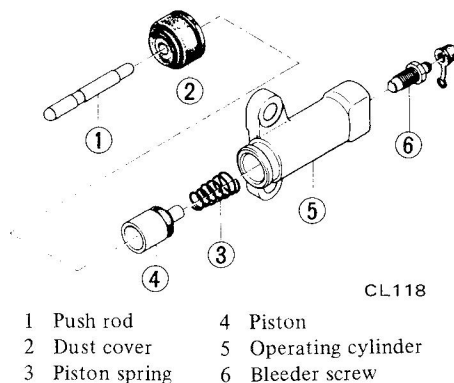
Operating cylinder securing bolt:  
2.5 to 3.5 kg-m  
(18 to 25 ft-lb)

Bleeder screw:  
0.7 to 0.9 kg-m  
(5.1 to 6.5 ft-lb)

## Disassembly and assembly

### Disassembly

1. Remove push rod with dust cover.
2. Remove piston assembly and piston spring.
3. Remove bleeder screw.



*Fig. CL-21 Exploded view of operating cylinder*

### Assembly

Assemble in the reverse order of disassembly. Closely observe the following instructions.

1. Prior to assembly, dip piston cup in clean brake fluid.

When installing cup, pay particular attention to its direction.

2. Dip cylinder and piston in clean brake fluid before assembly.

**Note:** Be sure to install piston assembly with piston spring in place.

## Inspection

Visually inspect all disassembled parts, replacing those found worn or damaged too badly beyond specifications.

## BLEEDING CLUTCH SYSTEM

To bleed clutch system, use the same procedure as described in Brake System.

1. Fill oil reservoir of operating cylinder with brake fluid.
2. Detach cap from bleeder screw on operating cylinder and, in its place, connect a vinyl tube.
3. Pour a small amount of brake fluid into a clean container and insert the open end of the vinyl tube into it.
4. Have a co-worker depress clutch pedal two or three times. With clutch pedal depressed fully, loosen bleeder screw to bleed air out of clutch system.
5. Tighten bleeder screw and release the pedal.
6. Repeat above steps until no air bubbles appear in vinyl tube.

#### Notes:

- a. Always keep brake fluid in oil reservoir so that it flows into the line continuously.
- b. Use care not to allow brake fluid coming into contact with painted surfaces.
- c. Make sure that no leak occurs at connections.
- d. Pour brake fluid into oil reservoir up to the specified level.

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## CLUTCH

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### SERVICE DATA AND SPECIFICATIONS

All 620 series

#### Clutch cover

Clutch cover type .....	Diaphragm (MF200K)
Diaphragm spring-to-flywheel distance                      mm (in) .....	43.0 to 45.0 (1.69 to 1.77)
Unevenness of diaphragm spring toe height                      mm (in) .....	less than 0.5 (0.0197)
Full load                      kg (lb) .....	335 to 385 (739 to 759)
Out of flatness of pressure plate mm (in) .....	0.1 (0.004)
Allowable refacing limit of pressure plate                      mm (in) .....	1.0 (0.04)

#### Clutch disc

##### Facing size

Outer dia. × inside dia. × thickness                      mm (in) .....	200 × 130 × 3.5 (7.87 × 5.12 × 0.1378)
Thickness of disc assembly	
Free                      mm (in) .....	8.6 to 9.0 (0.3386 to 0.3543)
Compressed                      mm (in) .....	7.6 to 8.0 (0.2992 to 0.3150)
Number of torsion springs .....	6
Allowable minimum depth of rivet head from surface                      mm (in) .....	0.3 (0.0118)
Allowable facing run-out                      mm (in) .....	0.5 (0.0197)
Allowable free play of spline (at the outer edge of disc) mm (in) .....	0.4 (0.0157)

#### Clutch pedal

Pedal height                      mm (in) .....	163 (6.42)
Play at clevis pin                      mm (in) .....	1 to 3 (0.0394 to 0.0118)
Full stroke                      mm (in) .....	129 (5.08)
Excess stroke (with clutch disengaged)	
Pressing strength at full stroke                      kg (lb) .....	8.4 (18.5)

#### Master cylinder-clutch

Dia. of master cylinder                      mm (in) .....	15.87 (58)
Allowable maximum clearance between cylinder and piston                      mm (in) .....	0.15 (0.0059)

#### Clutch operating cylinder

Dia. of operating cylinder                      mm (in) .....	19.05 (¾)
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#### Tightening torque

Clutch mounting bolt                      kg-m (ft-lb) .....	1.6 to 2.2 (12 to 16)
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## CLUTCH

### TROUBLE DIAGNOSES AND CORRECTIONS

Condition	Probable cause and testing	Corrective action
Slipping clutch	<p>Slipping of clutch is obvious when any of the following symptoms is encountered during operation.</p> <ol style="list-style-type: none"> <li>(1) Vehicle will not respond to engine speed during acceleration.</li> <li>(2) Insufficient vehicle speed.</li> <li>(3) Lack of power during uphill driving.</li> </ol> <p>Some of the above conditions are also experienced when engine is causing troubles. First determine whether engine or clutch is causing a trouble.</p> <p>If slipping clutch is left unheeded, wear and/or overheat will occur on clutch facing to such an extent that it is no longer serviceable.</p> <p><b>TO TEST THE CLUTCH FOR SLIPPING</b>, proceed as follows:</p> <p>During upgrade travelling, open throttle until engine is running at about 40 to 50 km/h (25 to 31 MPH) with gear shift lever in 3rd-speed position. Now, shift into highest gear and at the same time rev up engine. If clutch is slipping, vehicle will not respond to the operation of accelerator pedal soon.</p>	
	<ul style="list-style-type: none"> <li>• Clutch facing worn excessively.</li> <li>• Oil or grease on clutch facing.</li> <li>• Warped clutch cover or pressure plate.</li> </ul>	<p>Replace.</p> <p>Replace.</p> <p>Repair or replace .</p>
Dragging clutch.	<p>Grabbing clutch is particularly obvious when shifting gears from one position into another, especially into low gear.</p> <p><b>TO TEST THE CLUTCH FOR DRAGGING OR GRABBING</b>, proceed as follows:</p> <ol style="list-style-type: none"> <li>(1) Start up engine. Disengage clutch. Shift into reverse gear, and then into Neutral. Under this condition, gradually accelerate engine speed, and again shift into reverse gear. If clutch is dragging, gear "grating" is heard when shifting gears from Neutral into Reverse.</li> <li>(2) Stop engine and shift gears. (Conduct this test at each gear position.)</li> <li>(3) In step (2), gears are shifted smoothly except 1st speed position at idling.               <ol style="list-style-type: none"> <li>a. If dragging is encountered at the end of shifting, check for condition of synchro-mechanism in transmission.</li> <li>b. If dragging is encountered at the beginning of shifting, proceed to step (4) below.</li> </ol> </li> <li>(4) Push change lever toward Reverse side, depress pedal to check for free play of pedal.               <ol style="list-style-type: none"> <li>a. If pedal can be depressed further, check clutch for condition.</li> <li>b. If pedal cannot be depressed further, proceed to step (5) below.</li> </ol> </li> <li>(5) Check the clutch control (pedal height, free play, etc.)</li> </ol> <p>If any abnormal condition does not exist and if pedal cannot be depressed further, check clutch for condition.</p>	
	<ul style="list-style-type: none"> <li>• Clutch disc runout or warped.</li> <li>• Wear or rust on hub splines in clutch disc.</li> <li>• Diaphragm spring toe height out of adjustment or toe tip worn.</li> <li>• Worn or improperly installed parts.</li> </ul>	<p>Replace.</p> <p>Clean and lubricate with grease, or replace.</p> <p>Adjust or replace.</p> <p>Repair or replace.</p>

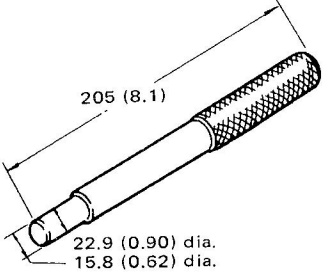
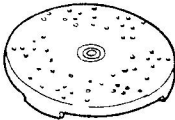
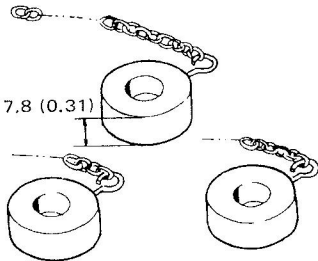
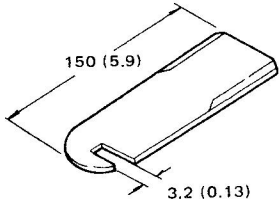
# CLUTCH

Condition	Probable cause and testing	Corrective action
Pulsating clutch.	Pulsating clutch pedal is usually noticeable when vehicle is just rolled off with clutch partially engaged.	
	<ul style="list-style-type: none"> <li>● Weakened, or broken clutch disc torsion spring.</li> </ul>	Replace.
	<ul style="list-style-type: none"> <li>● Oil or grease on clutch facing.</li> </ul>	Replace.
	<ul style="list-style-type: none"> <li>● Clutch facing out of proper contact or clutch disc runout.</li> </ul>	Replace.
	<ul style="list-style-type: none"> <li>● Loose rivets.</li> </ul>	Replace.
	<ul style="list-style-type: none"> <li>● Warped pressure plate or clutch cover surface.</li> </ul>	Repair or replace, as necessary.
	<ul style="list-style-type: none"> <li>● Unevenness of diaphragm spring toe height.</li> </ul>	Adjust or replace.
Noisy clutch.	<ul style="list-style-type: none"> <li>● Loose engine mounting or deteriorated rubber.</li> </ul>	Retighten or replace.
	<ul style="list-style-type: none"> <li>● A noise is heard after clutch is disengaged.</li> <li>● Damaged release bearing.</li> </ul>	Replace.
	<ul style="list-style-type: none"> <li>● A noise is heard when clutch is disengaged.</li> <li>● Insufficient grease on the sliding surface of bearing sleeve.</li> </ul>	Apply grease.
	<ul style="list-style-type: none"> <li>● Clutch cover and bearing are not installed correctly.</li> </ul>	Adjust.
	<ul style="list-style-type: none"> <li>● A noise is heard when the vehicle is suddenly rolled off with clutch partially engaged.</li> <li>● Defective pilot bushing.</li> </ul>	Replace.
Rabbit-hopping clutch	When "rabbit-hopping" of clutch occurs, vehicle will not roll off smoothly from a standing start or clutch will be engaged before clutch pedal is fully depressed.	
	<ul style="list-style-type: none"> <li>● Oil or grease on clutch facing.</li> </ul>	Replace.
	<ul style="list-style-type: none"> <li>● Clutch facing worn or loose rivets.</li> </ul>	Replace.
	<ul style="list-style-type: none"> <li>● Wear or rust on splines in drive shaft and clutch disc.</li> </ul>	Clean or replace.
	<ul style="list-style-type: none"> <li>● Warped flywheel or pressure plate.</li> </ul>	Repair or replace.
	<ul style="list-style-type: none"> <li>● Loose mounting for engine or power train units.</li> </ul>	Retighten.



# CLUTCH

## SPECIAL SERVICE TOOLS

No.	Tool number & tool name	Description  Unit: mm (in)	For use on	Reference page or figure No.
1.	ST20630000  Clutch aligning bar	 SE033	620 521 S30 230 130 GC10	Fig. CL-2 Fig. CL-3
2.	ST20050010 (Former Tool No.) ST20051000  Clutch assembly base plate	 SE002	620 521 610 510 S30 C30 230 130 GC10 C240 140 C80 780	Page CL-4 Fig. CL-12
3.	ST20050100 (Former Tool No.) ST20058001  Clutch assembly distance piece	 SE003	620 521 610 510 B110 B120 S30 C30 230 GC10 C80	Page CL-4
4.	ST20050240 (Former Tool No.) ST20050000  Diaphragm adjust wrench	 SE032	620 521 610 510 B110 B120 S30 C30 230 GC10	Fig. CL-13